

Hot air balloons fill the sky with color near Aspen, Colorado. EPA works with state and local partners to protect air quality in many mountain communities in Region 8, where pollutants like particulates can become trapped and adversely impact human health. Particulate matter is the term for particles found in the air, including dust, dirt, soot, smoke and liquid droplets. Particulate pollution in Aspen and many other mountain communities in Region 8 has improved over time due to strict vehicle emissions standards, and local measures that reduce vehicle traffic, control dust from street sanding and unpaved roads and limit the use of wood stoves and fireplaces. Aspen, for example, uses an effective mass transit system to keep vehicle miles traveled in check and minimize resulting pollution.

EPA uses two standards to manage particulate pollution. The PM 10 standard covers larger, "coarse" particles with diameters between 2.5 and 10 micrometers. These particles are commonly the result of vehicles traveling on unpaved roads, materials handling, crushing and grinding operations and windblown dust. In 2001, the Agency also began reviewing data collected by states for a new PM 2.5 standard for "fine" particles. This new standard is based on recent studies showing significant health impacts from particles less than 2.5 micrometers in diameter. These particles are from fuel combustion from vehicles, power generation, and industrial facilities, as well as from fireplaces and wood stoves. Region 8 expects that most areas will be in attainment for the new standard.



Introduction

Air quality is one of the most basic of EPA's responsibilities. Region 8's Air program helps maintain clear vistas and keep the air healthy to breathe by implementing the Clean Air Act with six states and 27 tribes. This includes our most populated areas, where vehicles and manufacturing and industrial activities are major pollution sources, and our rural areas, where power plants, energy development, agriculture and other activities can impact air quality and visibility.

Because there are many different sources of air pollution — everything from cars, trucks and construction equipment to power plants, refineries and manufacturing plants — the tools we use vary greatly. Permitting stationary sources helps us manage emissions; monitoring helps us identify and track potential problem areas and develop strategies that protect human health; and enforcement activities allows us to ensure compliance with the Clean Air Act.

Holding the line on ozone in Denver

In 2003, Denver became the first city in the nation to come back into attainment for five of the six basic Clean Air Act pollutants. The city has come a long way since being one of the most polluted in



the nation in the 1970s and 80s. Clean air, proximity to the Rocky Mountains, and other amenities made Denver one of the nation's fastest growing cities in the 1990s. With the problems of the past behind them, the City of Denver and State of Colorado value clean air and are working hard with EPA to keep it that way by addressing ozone pollution.

Ground-level ozone is formed when air masses stagnate and volatile organic compounds and nitrogen oxides react in the presence of sunlight. Cars, trucks, power plants and industrial facilities are the biggest sources of these emissions, while chemical solvents and even paint fumes also contribute. Ozone pollution is a big concern in urban areas in the summer months when lots of sun and high temperatures normally occur. Ozone is a strong irritant and is unhealthy to breathe, especially for people with respiratory diseases and for children and adults who are active outdoors.

Despite the progress made in the past, ozone has begun to reemerge as a problem in Denver and along the Front Range. During the summer of 2003, the city endured its worst ozone season in 20 years, and in April 2004, EPA formally announced that the Denver area does not meet the new, more stringent ozone requirements. This status is based on high ozone concentrations measured during the summers of 2001 through 2003. The area identified by EPA includes part or all of nine counties, and the cities of Boulder, Greeley and Fort Collins.

State and local governments are taking proactive steps to address ozone pollution through a flexible, EPA-endorsed plan called an Early Action Compact. Signatories to the EAC include the Colorado Department of Health and Environment, the Denver Regional Air Quality Council, the Colorado Air Quality

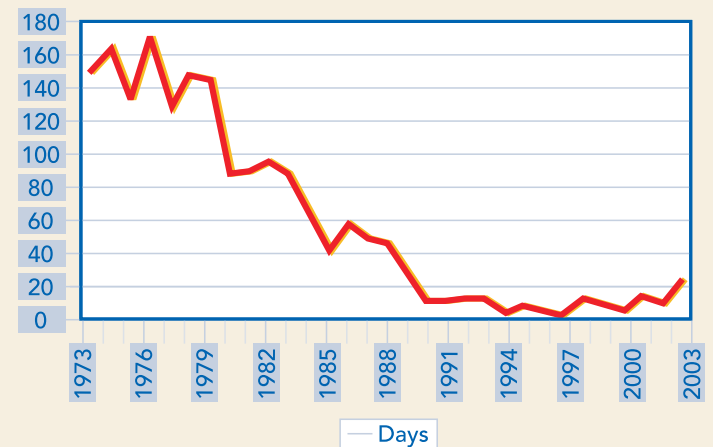
Control Commission, the Colorado Department of Transportation, the City of Denver and other local governments throughout the Front Range.

The EAC will allow Denver to get to clean air earlier than required by implementing a suite of control measures to reduce ground-level ozone. Primary measures include the use of lower Reid Vapor Pressure gasoline; major reductions in VOC emissions associated with the operations of more than 10,000 gas wells in the area; and emission reductions from reciprocating internal combustion engines. Denver's air will also reap the benefits of cleaner car and truck engines as a result of EPA's Tier 2 national rule, which includes more protective standards for tailpipe emissions and for sulfur content in gasoline. Additional approaches such as emission controls on industrial facilities and more planning requirements for transportation projects are also being considered.

As a result of this early action, Denver's non-attainment status has been deferred and the city will remain in attainment as long as actions taken under the compact result in attainment of the new ozone standard by December 31, 2007. During the summer of 2004, no ozone violations were recorded in the Denver area, primarily due to an unusually cool summer.

Region 8 Administrator Robbie Roberts stressed that the Early Action Compact represents yet another step that builds on the progress of past decades. "This is about the air in Denver getting cleaner," said Roberts. "It is about establishing a new, tougher standard for human health and working collaboratively with our partners to reach that standard."

Number of Days with Unhealthy Air Quality in Denver
1973 - 2003



Denver has come a long way from the days when unhealthy air was a common occurrence (above). Over the past three decades, the number of days where air quality was measured as "unhealthy for sensitive groups" to "very unhealthy" and "hazardous" to breathe has declined dramatically. Carbon monoxide and ozone were common culprits during the '70s and '80s. Today, ozone is reemerging as a concern (below). In April 2004 EPA began using a more stringent ozone standard that will improve air quality for nearly 160 million people nationwide. The graph below shows Denver-area monitor readings and the new 8-hour standard of 0.08 ppm.

8-Hour 4th Highest Ozone Trends
from selected Denver Metropolitan Monitoring Stations

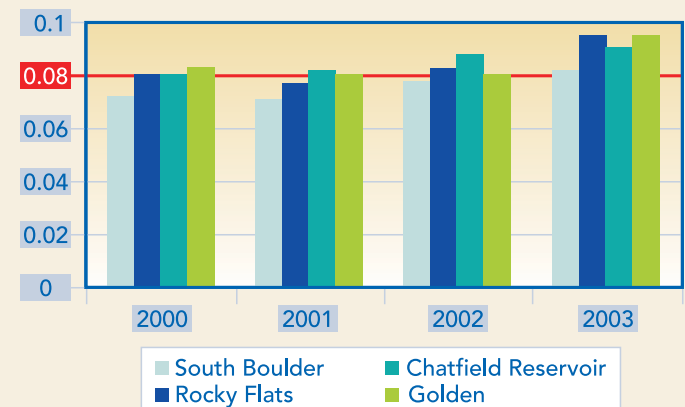




Photo: National Park Service

Glacier National Park, Montana. The Clean Air Act protects pristine air quality here and in 41 other specially designated areas in Region 8.

Controlling evaporative emissions from gasoline

When it comes to summer ozone, gasoline is one of the big culprits. During the summer months, VOCs such as butane, xylene and benzene evaporate from gasoline into the air and can contribute to high ozone days. When you consider that there are thousands of gas stations in the Denver area, these emissions add up.

In 2004, EPA acted to reduce VOC emissions in Denver by requiring that gasoline sold during the summer meet a lower volatility standard. Volatility is often measured as Reid Vapor Pressure. A lower RVP means that the fuel evaporates less readily into the air. Additionally, by using the lower RVP gasoline, cars actually perform better and have lower emissions – thus doubling the benefits to the environment while improving vehicle performance.

EPA conducted a survey of refiners serving the Denver area and determined that a 7.8 psi RVP federal requirement for gasoline was attainable and should be enforced. This more stringent requirement (down from the 9.0 psi RVP previously allowed by EPA waivers) is reducing the emission of ozone-forming VOCs in the summer months by as much as 13 tons per day.

Protecting our ‘spacious skies’

Region 8 is a land of wide, open spaces. Two-thirds of our population reside along Utah’s Wasatch Front and Colorado’s Front Range. The rest of the region is comprised of vast, sparsely populated areas of evergreen forests, rugged mountains and canyons, high plateaus, arid farmland and grasslands — areas where pristine air quality and long vistas are valued for their natural recreational, scenic or historic importance.

While most areas in Region 8 are in Region 8 are attaining health-based air quality standards, many receive special treatment under the Clean Air Act. In fact, all areas are protected by rules from “significant deterioration,” but the highest level of protection is afforded to national parks, forests, wilderness areas, and tribal areas that volunteer for more stringent protection. Congress has set a clear goal of protecting, preserving and enhancing air quality in these special Class 1 areas.

Region 8’s Air program, working with states and tribes, is responsible for the Prevention of Significant Deterioration provisions of the CAA in 42 of these specially designated Class 1 areas. The basic goals of the PSD program are: (1) to ensure that resource development and growth continues while preserving existing air quality and (2) to maintain air quality in areas of special value.

Class 1 areas have stringent limits on how much air pollution levels can increase. Large, new sources of air pollution and modifications to existing major sources that may impact these areas are subject to environmental reviews and are required to employ the best pollution control technologies available. Any new sources determined to potentially exceed allowable pollution “increments” are prohibited, unless they find an offset from an existing source.

In Region 8, there are many places where new air pollution sources or the expansion of older sources are a concern, particularly for nitrogen dioxide, sulfur dioxide and particulate matter. These sources include oil, gas and coal development activities and power plants. Currently, EPA is working with states and tribes in North Dakota, the Powder River Basin in Wyoming and Montana, the Green River Basin in Southwest Wyoming,



Region 8 Administrator Robbie Roberts helps dedicate additions to the Clean School Bus fleet in Denver, Colorado. EPA has set a national goal of upgrading the nation’s entire school bus fleet to low-emission buses by 2010.

and the San Juan Basin in Southwest Colorado to monitor potential PSD concerns. EPA's goal in these areas is to find solutions that protect air quality in sensitive areas like the Northern Cheyenne Indian Reservation and Mesa Verde, Grand Teton and Theodore Roosevelt National Parks, while allowing the appropriate development of energy resources and economic growth to continue. Through collaboration, we are working to find innovative solutions that keep Western vistas unspoiled.

Taking the 'black puff' out of school buses

EPA is protecting children from poor air quality by targeting school buses. Diesel school buses, especially older ones that lack emission control devices, emit particulate matter and other pollutants in diesel exhaust that, when inhaled, may aggravate asthma, allergies and cause other health problems. Under the Clean School Bus USA grant program, Region 8 is funding projects that reduce children's exposure by retrofitting buses to run on cleaner fuels and replacing the oldest buses with new, less polluting ones.

In October 2003, twelve Colorado Front Range school districts were awarded a \$400,000 grant to retrofit school bus fleets with diesel catalyst mufflers and low-pollution biodiesel. Diesel catalyst mufflers reduce fine particulate matter emissions by up to 20 percent and nitrogen oxide emissions by up to 10 percent by breaking down pollutants into harmless gases as they pass through the exhaust system. Biodiesel is a domestically produced renewable fuel that can be made from vegetable oil or animal fat. EPA estimates that B20 (20 percent biodiesel and 80 percent petrodiesel) reduces emissions of particulate matter by 10 percent, hydrocarbons by 21 percent and carbon monoxide by 11 percent.

Region 8 has awarded similar grants to other communities. In 2003, the Jordan School District in Utah received a \$350,000 grant to purchase new school buses that run on compressed natural gas, a low-pollution fuel that can cut nitrogen oxides by 40 to 60 percent, and carbon monoxide and particulates by even more. More recently, EPA awarded Littleton (Colorado) Public Schools \$21,000 to fund the additional cost of biodiesel fuel for their entire fleet of 67 buses, and the Missoula (Montana) City-County Health Department received a grant to fund the additional cost of biodiesel fuel for two companies that provide bus service to the area.

Improving indoor air quality in schools

Most people are aware that outdoor air pollution can damage their health, but indoor air pollution can be just as harmful. Studies indicate that indoor air pollution can be two to five times, and in some cases more than 100 times, higher than outdoor levels. Unlike outdoor air, indoor air is often recycled again and again. This causes it to trap and build up pollutants such as dust, mold and spores, pollen, pet dander and smoke.

In addressing indoor air quality, EPA is focusing a lot of attention on schools. Nearly 55 million young people spend their days in 115,000 elementary and secondary schools across the United States. Studies show that half of these schools have problems that can be linked to unsatisfactory indoor air quality, and one in four report unsatisfactory ventilation.

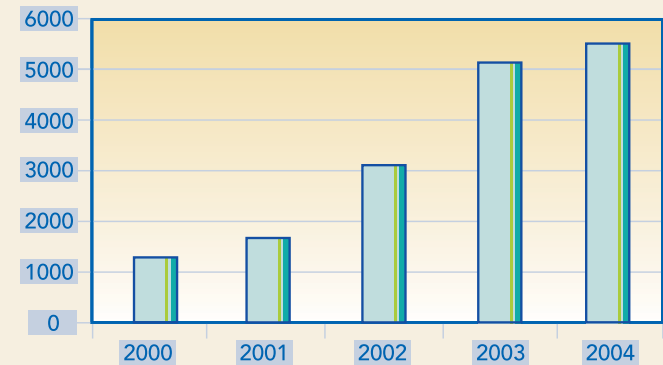
Problems associated with poor indoor air quality include asthma, lower performance and attention spans, and higher rates of student and teacher absenteeism. Nationally, asthma rates have doubled since 1980 and today the disease affects one in 13 school children. It is estimated that up to 13 million school days are missed every year because of asthma.

EPA's Tools for Schools program provides schools with a comprehensive strategy to address indoor air issues. Since 1999, more than 300 schools in Region 8 have fully implemented the Tools for Schools program and improved indoor air quality.

In South Dakota, the Rapid City Area School District 51-4 recently completed implementation of the program in all 27 of its schools and received EPA's Tools for Schools Excellence Award. Here, school officials, with the support of Region 8 staff and

ENERGY STAR® Homes in Region 8

Each home enrolled represents up to 4,500 pounds in greenhouse gas emissions avoided and hundreds of dollars in energy savings.



Green power lighting up Moab

With the help of some forward-looking leaders, wind power continues to emerge as a significant renewable resource in Region 8. In August 2004, Moab, Castle Valley, Pack Creek Ranch, and Spanish Valley, Utah, made a commitment to have four percent of the Greater Moab Area's electricity usage offset by wind power, making it the first in the nation to meet and exceed the EPA Green Power Partnership's minimum benchmark for green power usage with voluntary purchases. EPA estimates the environmental benefit is equivalent to avoiding the generation of four million pounds of carbon dioxide or planting 750 acres of trees.



Matt Clouse (left), director of EPA's Green Power Partnership, presents Moab Mayor, Dave Sakrison, and Castle Valley Mayor, Bruce Keeler, with a banner recognizing Greater Moab as the nation's first Green Power Community.

Much of the credit for this success belongs to the campaign led by the Moab Green Power Steering Committee, a group of citizens, business leaders and public officials. Under the agreement, Moab businesses and residents will work through Utah Power's Blue Sky program to increase current wind power purchases to four percent of total energy usage.

Moab Mayor David Sakrison was one of the key leaders in advocating the clean energy choice. "This designation symbolizes our commitment to both the development of renewable energy technologies and protecting our environment," he said. Others agree. "EPA is delighted to recognize the Moab Area for pioneering this partnership of businesses and residents to increase green power usage," said EPA Regional Administrator Robbie Roberts. "The community is supporting new, clean, renewable power facilities that generate electricity with less air pollution and no net increases in greenhouse gas emissions."

contractors, inspected all of the district's schools and administrative buildings and identified problems affecting indoor air. The buildings were checked for poor ventilation, proper air flow from heating and cooling vents, mold, mildew and sources of odor pollutants. Issues that needed immediate attention or could be fixed easily have already been addressed. Others were scheduled for maintenance and are being addressed.

One Rapid City school, Horace Mann Elementary, is nearly 50 years old. During inspections, several indoor air quality issues were found, including mold, poor ventilation and broken exhaust fans and air vents. In 2003, the entire HVAC system of the school was replaced and today, the district reports a measurable decrease in student and teacher absenteeism and improve teacher morale. The district attributes some of this good news to improvements in indoor air quality.

Saving air quality, energy and money with ENERGY STAR®

EPA's ENERGY STAR® programs contribute to cleaner air by improving energy efficiency and reducing emissions of greenhouse gases and pollution from fossil fuel combustion. Last year, Americans participating in ENERGY STAR programs saved enough energy to power 20 million homes and avoided greenhouse gas emissions equivalent to those released from 18 million vehicles. This was accomplished while saving consumers \$9 billion.

In Region 8, more than 500 organizations participate in ENERGY STAR programs, from home builders, governments, K-12 schools, colleges and universities, commercial organizations, utilities to small business, restaurants, congregations and product manufacturers.



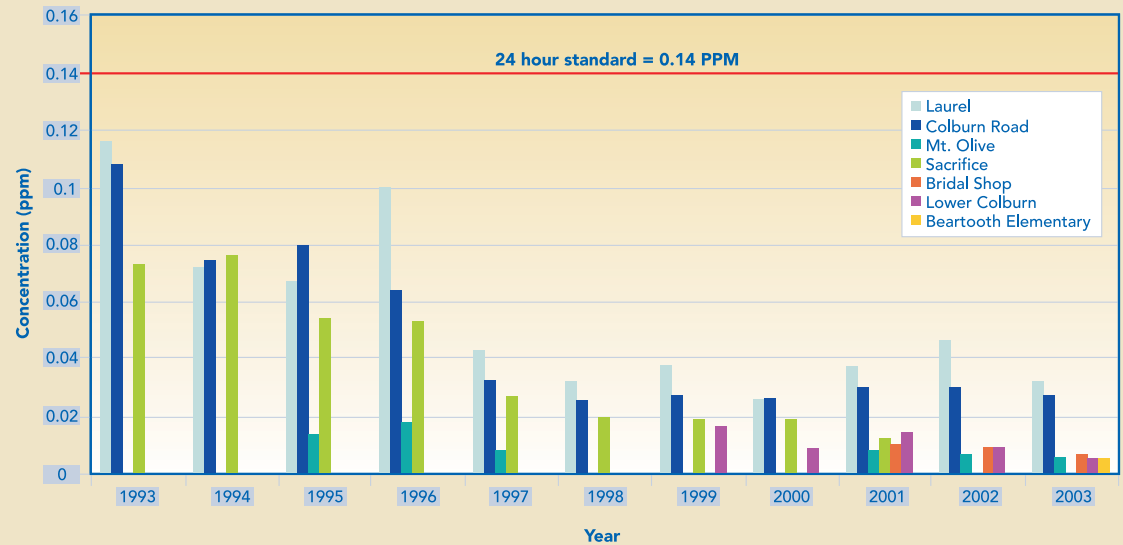
One of the biggest highlights for 2004 is Kennecott Land's Daybreak residential community in South Jordan, Utah. Now under construction, Daybreak will eventually include up to 14,000 homes, making it the largest ENERGY STAR residential development in the nation. The developer, Kennecott Land, has made a commitment to building communities that use fewer resources and minimize environmental impacts by requiring builders to meet high energy-efficiency standards. So far, the 23 homes in Daybreak's model community have been tested and meet ENERGY STAR for Homes standards.

The project has emerged as a model for construction standards in the area and the state. Energy efficient components in Daybreak homes include blown-in fiberglass, cellulose or expanding foam insulation in above grade walls, advanced air sealing on the building shell and duct systems, low-emissivity glass in all windows and + 90 percent efficient furnaces. As a result, the homes use 30 percent less energy than homes built to the Model Energy Code. In terms of avoided pollution, just one Daybreak home will keep up to 4,500 pounds of greenhouse gases out of the air each year — 14,000 homes will prevent the release of a staggering 63 million pounds annually. In addition, the homes provide improved indoor air quality and optimal ventilation, reducing exposure to potential sources of indoor pollutants that often enter through leaks in attics, basements or garages. Homeowners will get all these energy and environmental benefits and reduce their utility bills by as much as \$400 annually.

Daybreak is about more than just energy efficiency. Additional sustainable and "green building" practices include an on-site construction waste recycling program, a water recapture system that captures and reuses all runoff water, diverse landscapes that include indigenous and water-wise plants, parks and open space preservation, commercial energy-efficient building design, recycling for homes and businesses and alternative transportation.

RESULTS IN FOCUS

Billings, Montana Area SO₂ 24-hour 2nd Max



EPA and the Montana Department of Environmental Quality have been working together over the past decade to control sulfur dioxide pollution in the Billings area. This graph shows that the state implementation plan for air quality has been effective in reducing SO₂ concentrations well below health-based standards at monitoring sites. These plans focus on reducing SO₂ emissions from seven industrial facilities in the area.

Health concerns associated with exposure to SO₂ include effects on breathing, respiratory illness, alterations in the lung's defenses, and aggravation of existing cardiovascular disease. Subgroups of the population that are most sensitive to SO₂ include asthmatics and individuals with cardiovascular disease or chronic lung disease, as well as children and the elderly. Together, SO₂ and NO_x are the major precursors to acidic deposition (acid rain), which is associated with the acidification of lakes and streams, accelerated corrosion of buildings and monuments and reduced visibility.

Region 8 has four areas where SO₂ concentrations have been frequently higher than or approached the standard in the past. These include Billings and East Helena, Montana, and Salt Lake County and a portion of Tooele County in Utah. SO₂ concentrations in each of these areas have been reduced due to state efforts to control emissions.